

IN THE CLAIMS

1. (currently amended): A process for the synthesis of an oligonucleotide in which an oligonucleotide is assembled on a swellable solid support using the phosphoramidite approach in the presence of a solvent and an activator, wherein the activator is not tetrazole or a substituted tetrazole, the solvent and swellable support being selected such that a swell ratio of from 5 to 20 is achieved, swell ratio being calculated according to the formulas:

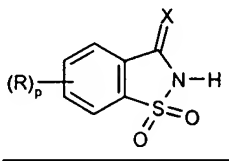
$$\text{Swell Ratio} = \frac{\text{Vol}_{\text{final}} - \text{Vol}_{\text{initial}}}{\text{Vol}_{\text{initial}}}$$

wherein

Vol_{final} is the final volume occupied by the swellable support after full swelling; and

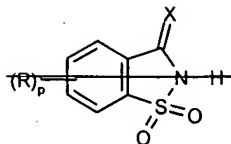
Vol_{initial} is the initial dry bed volume the swellable support.

2. (currently amended): A process according to claim 1, wherein the activator is selected from the group consisting of i) pyridinium[,] salts; ii, imidazolinium and salts; iii) benzimidazolinium salts; iv) benzotriazole; and derivatives thereof; and saccharin or a saccharin derivative v) hydroxybenzotriazole; vi) compounds having the chemical formula (1):



wherein p is 0 or an integer from 1 to 4; X is O or S; and R for each occurrence is a substituent selected from the group consisting of halo groups, aliphatic groups, -NR¹R², -OR³, -OC(O)R³, -C(O)OR³, cyano, aryl groups, heterocyclyl groups, -CHO, -COR³, -NHCOR³, aralkyl groups, and -SR¹³, wherein R¹¹ and R¹² are each, independently, -H, an aliphatic group, an aryl group, an aralkyl group; or together with the nitrogen to which they are attached form a 5 or 6-membered heterocyclic ring; and R¹³ is an aliphatic group, an aryl group, or an aralkyl group; or two adjacent R groups taken together with the carbon atoms to which they are attached form a six membered saturated or unsaturated ring; and vii) salts formed between a compound of chemical formula (1) and an organic base.

3. (currently amended): A process according to claim 2, wherein the activator has the general chemical formula:



~~wherein p is 0 or an integer from 1 to 4;~~

~~R for each occurrence is a substituent, or two adjacent R groups taken together with the carbon atoms to which they are attached form a six membered saturated or unsaturated ring; and~~

~~X is O or S is a compound selected from the (vi) and (vii) compounds.~~

4. (currently amended): A process according to claim 3, wherein the activator is the N-methylimidazole, pyridine or 3-methylpyridine salt of saccharin a compound of formula (1) wherein X is O and p is 0.

5. (previously presented): A process according to claim 1, wherein the swellable support comprises functionalised polystyrene, partially hydrolysed polyvinylacetate or poly(acrylamide).

6. (previously presented): A process according to claim 1, wherein the process comprises coupling a nucleoside phosphoramidite with a nucleoside or oligonucleotide comprising a free hydroxy group.

7. (original): A process according to claim 6, wherein the nucleoside phosphoramidite is a deoxyribonucleoside-3'-phosphoramidite or ribonucleoside-3'-phosphoramidite.

8. (previously presented): A process according to claim 6, wherein the nucleoside or oligonucleotide comprising a free hydroxy group comprises a free 5'-hydroxy group.

9. (previously presented): A process according to claim 6, wherein the nucleoside or oligonucleotide comprising a free hydroxy group is attached to the solid support by a cleavable linker.

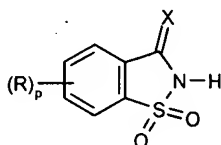
10. (canceled)

11. (currently amended): A process according to claim 40 1, wherein the solvent is ~~acetonitrile~~, dimethylformamide, N-methylpyrrolidinone, dichloromethane, tetrahydrofuran or pyridine.

12. (previously presented): A process according to claim 1, wherein the assembled oligonucleotide is cleaved from the solid support.

13. (currently amended): A process for the synthesis of an oligonucleotide which comprises coupling a nucleoside phosphoramidite with a nucleoside or oligonucleotide comprising a free hydroxy group in the presence of an activator, wherein:

- a) the nucleoside or ~~nucleotide~~ oligonucleotide comprising a free hydroxy group is attached to a swellable solid support by a cleavable linker, said swellable support being selected from the group consisting of functionalized polystyrene, partially hydrolyzed polyvinylacetate and poly(acrylamide);
- b) said activator has is a salt formed between an organic base and a compound having the general chemical formula:



wherein p is 0 or an integer from 1 to 4;

R for each occurrence is a substituent[.] selected from the group consisting of halo groups, aliphatic groups, -NR₁R₂, -OR₃, -OC(O)R₃, -C(O)OR₃, cyano, aryl groups, heterocyclyl groups, -CHO, -COR₃, -NHCOR₃, aralkyl groups, and -SR₁₃, wherein R₁₁ and R₁₂ are each, independently, -H, an aliphatic group, an aryl group, an aralkyl group; or together with the nitrogen to which they are attached form a 5 or 6-membered heterocyclic ring; and R₁₃ is an aliphatic group, an aryl group, or an aralkyl group; or two adjacent R groups taken together with the carbon atoms to which they are attached form a six membered saturated or unsaturated ring; and X is O or S;
the process employing a solvent which swells the solid support selected from the group consisting of ~~acetonitrile~~, dimethylformamide, N-methylpyrrolidinone, dichloromethane, tetrahydrofuran and pyridine.

14. (currently amended): A process according to claim 13, wherein the activator is the N-methylimidazole, pyridine or 3-methylpyridine salt of ~~saccharin~~ a compound of formula (1) wherein X is O and p is 0.